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MITES FROM ALASKA

BY
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BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
ZOOLOGY

Vol. 2 No. 9

LONDON: 1955

THE BULLETIN OF THE BRITISH MUSEUM
(NATURAL HISTORY), instituted in 1949, is
issued in five series corresponding to the Departments
of the Museum, and an Historical Series.

*Parts appear at irregular intervals as they become
ready. Volumes will contain about three or four
hundred pages, and will not necessarily be completed
within one calendar year.*

This paper is Vol. 2, No. 9 of the Zoological series.

PRINTED BY ORDER OF THE TRUSTEES OF
THE BRITISH MUSEUM

Issued January, 1955

Price Seven Shillings

A COLLECTION OF MESOSTIGMATID MITES FROM ALASKA

By G. OWEN EVANS

SYNOPSIS

One new genus and six new species are described; the classification of the Epicriina is discussed and a new family ARCTACARIDAE is erected; the Arctic species (females only) of the genus *Arctoseius* Thor are keyed.

INVESTIGATIONS on the acarine fauna of the Arctic prior to 1904 have been summarized by Trågårdh (1904). Since this date a number of papers on the systematics and ecology of Arctic mites has appeared particularly on the Oribatei. The most important contributions to the study of the Mesostigmatid mite fauna have been made by Trågårdh (1910), Thor (1930), Sellnick (1940) and Haarløv (1942).

The present work deals with part of a collection of mites from Alaska deposited in the collections of the British Museum (Nat. Hist.) by the collector, N. A. Weber, in 1950. A preliminary account of the fauna and descriptions of the habitats from which collections were made has been published by Weber (1950). Of the seven species of Mesostigmatid mites present in the collection six are described as new to science including one new genus and one new family.

The type material is deposited in the British Museum (Nat. Hist.).

MESOSTIGMATA—GAMASINA

Family LAELAPTIDAE Berl., 1892.

Haemogamasus alaskensis Ewing, 1925

1925. *Haemogamasus alaskensis* Ewing, H. E., Proc. biol. Soc. Washington 38 : 138-139.

1933. *Haemogamasus sternalis* Ewing, H. E., Proc. U.S. Nat. Mus. 82 : 3.

The type specimen, a single female, was collected on a *Microtus* sp. at Crater Mountain, Ophir, Alaska. It is also known from a number of localities in United States of America (Keegan, 1951).

The collection under study contained numerous females and nymphs from Point Barrow.

Family PHYTOSEIIDAE Berl., 1913

Genus *Arctoseius* Thor

1930. *Arctoseius* Sig. Thor, Skr. Svalbard Ishavet Oslo, 27 : 112.

1948. *Tristomus* Hughes, A. M., Mites associated with stored food products, H.M.S.O., London : 138-139, *syn. nov.*

The genus *Arctoseius* was erected by Thor (1930) for *Arctoseius laterincisus* Thor (1930), a mite collected under stones on the island of Spitzbergen. The original description and photographs of the genotype are unfortunately inadequate for its precise identification. Haarlov (1942) published a redescription, with figures, of what he considered to be *A. laterincisus* from material collected in Greenland. Thor and Haarlov's species are undoubtedly congeneric but without examining the type material of the former it is not possible to be certain that they are conspecific. For the present, however, the writer accepts Haarlov's interpretation of Thor's species.

In 1948, Hughes erected a new genus, *Tristomus*, which is closely related to *Arctoseius* in the structure of the venter of the female, the epistome and gnathosoma. Recently the writer remounted and examined the genotype, *Tristomus butleri* Hughes, and found that the dorsal shield in both sexes has lateral incisions characteristic of *Arctoseius*; the species should be removed to that genus.

The most comprehensive study of the genus *Arctoseius* to date was made by Willmann (1949) who added seven species to the genus; six of which were new to science. Willmann also proposed the division of the genus into four subgenera, namely, *Arctoseius* s. str., *Arctoseiulus*, *Arctotarseius* and *Arctoseiodes*. The subgenus *Arctoseiodes* (type *Arctoseius* (*Arctoseiodes*) *ibericus* Willm. (1949) is characterized by females having a ventri-anal shield and a genital shield with a pair of setae. It is sufficiently distinct from the *Arctoseius* group to warrant generic status. The subgenera *Arctoseiulus* (type *Laelaps* (*Iphis*) *semiscissus* Berl.) and *Arctotarseius* (type *A.* (*Arctotarseius*) *austriacus* Willm.) are separated from *Arctoseius* s. str. by the occurrence of a pair of jugular plates in the former and the structure of tarsus I in the latter.

Vitzthum (1941) placed *Arctoseius* in the Hypoaspidinae, but as Willmann (1949) has pointed out, the genus is more closely related to the *Lasioseius*-group. The subfamily Podocininae into which Willmann (loc. cit.) transferred the genus contains as its type genus *Podocinium* Berl., a typical Macrochelid. *Arctoseius* should be placed in the Phytoseiinae (family Phytoseiidae).

The following is an emended definition of the genus *Arctoseius*:

Small free-living mites with the entire dorsal shield incised laterally. Dorsal shield with 31 pairs of simple setae, lateral interscutal membrane with 10 pairs of setae. Ventral surface of female with a narrow genital shield without setae and pores. Sternal shield with two or three pairs of setae. Metasternal setae may or may not be situated on small platelets. Anal shield well separated from the genital. Peritrematal plate usually fused with dorsal shield anteriorly but may be free in those species showing a reduction in the peritreme. In the male the sterniti-genital shield is distinct from the large ventri-anal shield. The gnathosoma is normal for the family. The chaetotaxy of the palptrochanter, femur and genu is (2-5-6). The epistome is bi- or tridentate. All the legs are provided with a pulvillus and two claws. Genotype, *Arctoseius laterincisus* Thor (1930).

The Arctic species (females only) of *Arctoseius* s. str. may be separated as follows:

1. Tarsus I with a conspicuous sensory organ laterally

Arctoseius laterincisus (Thor) Haarlov, 1942.

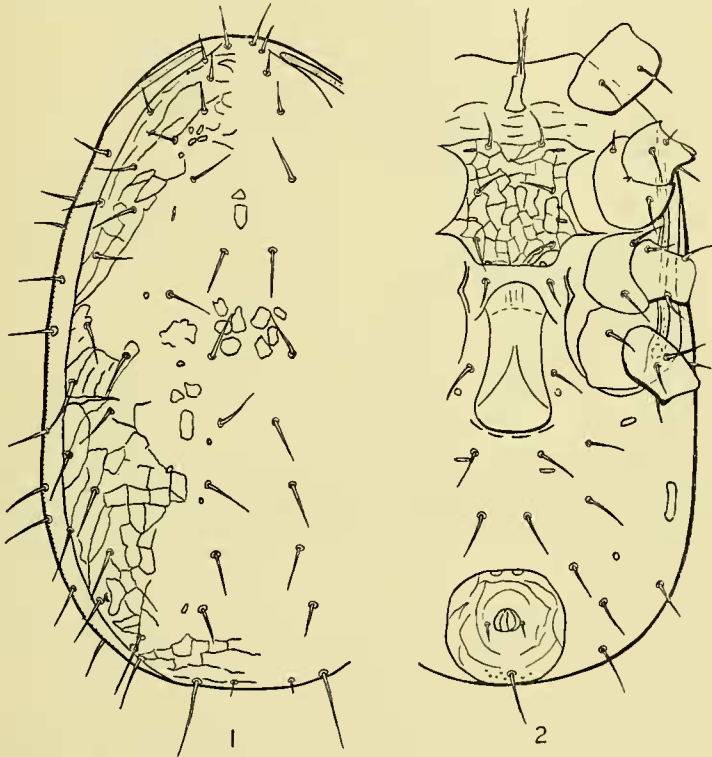
- Tarsus I without such sensory organ laterally 2.

- 2. Epistome bidentate *Arctoseius cetratus* (Sell), 1940.
- Epistome tridentate 3.
- 3. Peritreme extending beyond the level of coxa I *Arctoseius ornatus* sp. nov.
- Peritreme reduced, not reaching coxa I 4.
- 4. Movable digits of chelicerae about 3 times as long as the corniculi, para-anal setae about $\frac{1}{2}$ length of the post-anal seta *Arctoseius weberi* sp. nov.
- Movable digits of chelicerae about $1\frac{1}{2}$ times as long as the corniculi, para-anal setae approximately equal in length to the post-anal seta *Arctoseius multidentatus* sp. nov.

A. laterincisus has been recorded from Spitzbergen (Thor, 1930) and Greenland (Haarlov, 1942). The type locality of *A. cetratus* (syn. *Arctoseius bispinatus* Weis Fogh, 1947) is in Iceland. This species has also been recorded from Denmark and England under *A. bispinatus*.

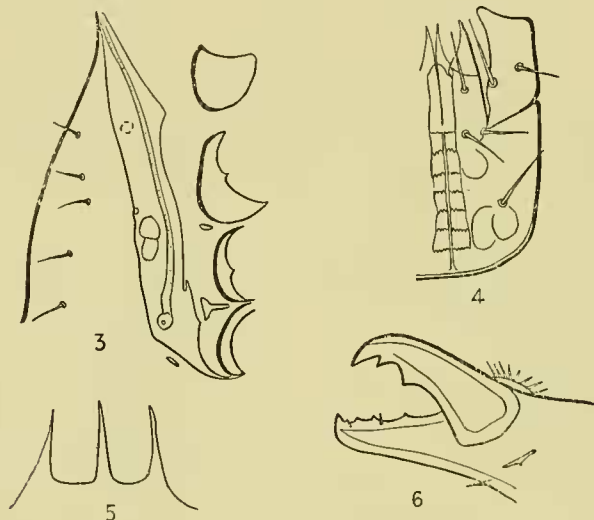
***Arctoseius ornatus* sp. nov.**

Female. The dorsal shield is strongly ornamented and bears 31 pairs of simple setae distributed as in Fig. 1. The lateral incisions of the shield are distinct. The interscutal membrane surrounding the shield is provided with ten setae laterally.



FIGS. 1-2. *Arctoseius ornatus* sp. nov., female. Fig. 1, dorsal view. Fig. 2, ventral view.

Ventrally, the heavily ornamented sternal shield has the normal three pairs of setae and their associated pores (Fig. 2). The anterior margin of the shield in the paratype is indented between the first pair of sternal setae. The posterior margin is truncated. The third pair of sternal pores normally associated with the metasternal setae are situated on the posterior margin of the sternal shield. The metasternal setae are not borne on platelets. The genital shield is narrow with its posterior margin slightly convex. The endopodal plates in the region of coxae III and IV are poorly developed. The genital setae and associated pores are situated lateral to it. The post-epigynal plates are four in number. The region between the genital



FIGS. 3-6. *Arctoseius ornatus* sp. nov., female. Fig. 3, lateral view. Fig. 4, Gnathosoma ventral. Fig. 5, tectum. Fig. 6, chelicera.

and the anal shield is furnished with ten setae and four small platelets. The metapodals are elongate. The remaining four ventral setae are placed lateral to the anal shield—two on each side. The anal shield is almost circular in contour ($102 \times 99\mu$) and bears the normal three setae. The para-anal setae are less than one-half the length of the post-anal seta.

The stigmata are situated ventro-laterally in the region of coxa IV. The peritreme is well developed and reaches beyond coxa I (Fig. 3). The peritrematal plate is relatively large for the genus and is fused anteriorly with the dorsal shield. Posteriorly it extends a short distance around the posterior margin of coxa IV. The exopodal plates are fragmentary and not fused with the peritrematal.

The tritosternum is normal for the genus. The ventral surface of the gnathosoma is provided with four pairs of setae distributed as in Fig. 4. The ventral

groove is provided with seven rows of denticles. The corniculi are short and do not extend beyond the anterior margin of the palptrochanter. The pedipalps are normal and the chaetotactic formula for the first three free segments is (2-5-6). The specialized seta on the palptarsus is two-pronged. The tectum (epistome) is tridentate (Fig. 5).

The chelicerae are strongly formed (Fig. 6). The movable digit is bidentate and the fixed quadridentate with a short *pilis dentilis*.

All legs are normal for the genus.

DIMENSIONS. Length 490-528 μ , breadth 280-285 μ .

LOCALITY. Two females from Point Barrow, Alaska (*Coll. A. Weber, 1950*); holotype (1954.3.19.8) and paratype (1954.3.19.9).

Arctoseius weberi sp. nov.

FEMALE. The dorsal shield is faintly reticulated. The chaetotaxy of the shield and the lateral interscutal membrane is normal for the genus.

Ventrally, the anterior and posterior margins of the ornamented sternal shield are indented (Fig. 7). The shield bears three pairs of setae and three pairs of pores; the third pair of sternal pores being situated in its posterior margin. The prae-endopodal shields, although weakly sclerotized, are relatively large. The metasternal setae lie posterior to the shield. The endopodal plates are weak. The flask-shaped genital shield is faintly sculptured and covered with minute punctures. The genital setae and pores lie off the shield. The post-epigynial and endopodal shields are well-formed. The eight pairs of ventral setae are distributed as in the figure. The anal shield is broader than long (80 \times 98 μ). The para-anal setae are about one-half the length of the post-anal setae.

The stigma is situated ventro-laterally between coxae III and IV. The peritreme is reduced and reaches just beyond the anterior border of coxa II (Fig. 8). The peritrematal plate is strongly formed but not fused with the dorsal shield as in the preceding species. The exopodals are fragmentary and not fused with the peritrematal plate.

The tritosternum is normal for the genus and the gnathosoma is basically similar to that of the preceding species (Fig. 9). The corniculi are approximately one-third the length of the fixed digit of the chelicerae. The pedipalps are normal. The specialized seta on the palptarsus has two prongs. The tectum (Fig. 10) is tridentate with the median prong divided into three short processes distally.

The movable digit of the chelicera is bidentate and the fixed multidentate with a short *pilis dentilis* (Fig. 11).

All legs normal for the genus.

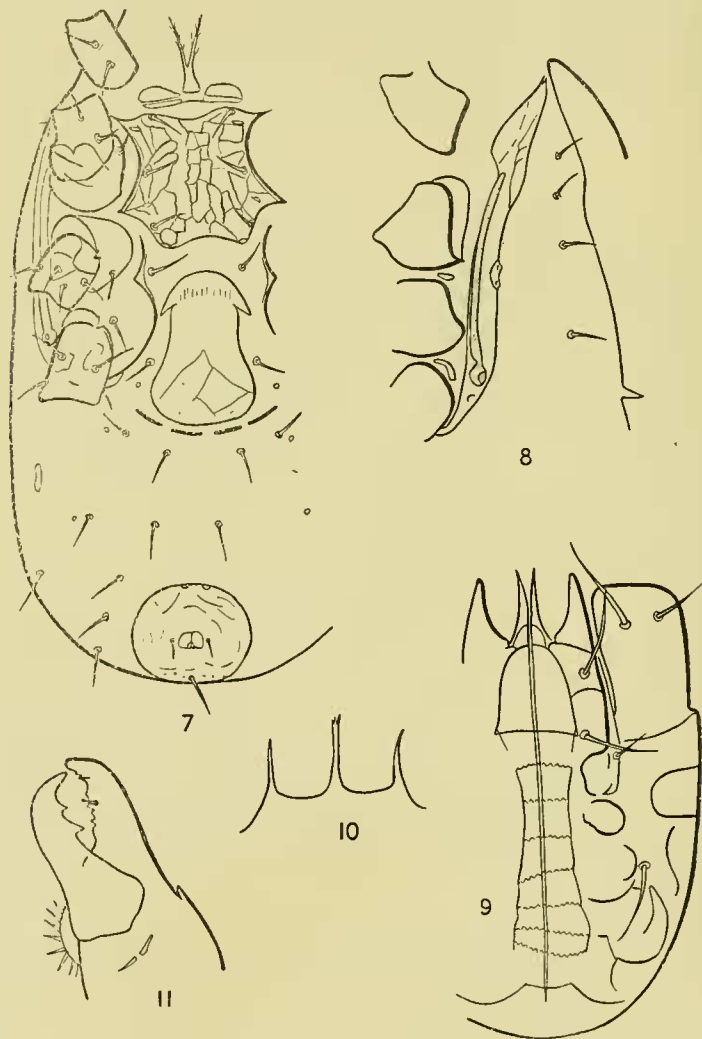
DIMENSIONS. Length 540 μ , breadth 286 μ .

LOCALITY. A single female (the holotype 1954.3.19.10) from Point Barrow, Alaska (*Coll. A. Weber, 1950*).

Arctoseius multidentatus sp. nov.

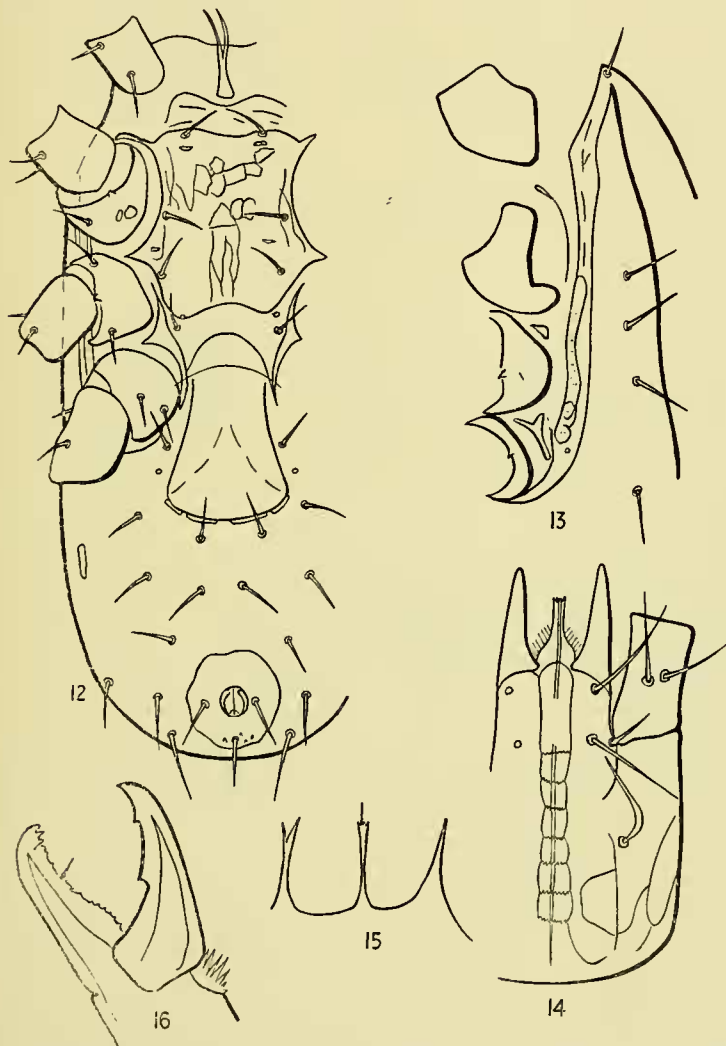
The form and chaetotaxy of the dorsal shield is similar to the preceding species. The lateral interscutal membrane bears the normal ten pairs of setae.

Ventrally, the sternal shield is lightly ornamented; the ornamentation being strongest in the median region of the shield (Fig. 12). The three pairs of sternal setae are normal in position as are the two anterior pairs of pores. The third pair of pores is unusual, perhaps aberrant, in that one is situated on the sternal shield while the other is located on the interscutal membrane between the posterior-lateral



FIGS. 7-11. *Arctoseius weberi* sp. nov., female. Fig. 7, ventral view. Fig. 8, lateral view. Fig. 9, gnathosoma ventral. Fig. 10, tectum. Fig. 11, chelicera.

margin of the dorsal shield and the metasternal seta. The region anterior to the sternal shield is lightly sclerotized but not differentiated into prae-endopodal shields as in the preceding species. The large genital shield is wedge-shaped, its posterior margin being slightly convex. The genital setae and pores lie off the shield. The post-epigynal shields are four in number. The eight pairs of ventral setae are dis-



FIGS. 12-16. *Arctoseius multidentatus* sp. nov., female. Fig. 12, ventral view. Fig. 13, lateral view. Fig. 14, gnathosoma ventral. Fig. 15, tectum. Fig. 16, chelicera.

tributed as in the figure. The metapodals are elongate. The anal shield is irregular in contour. The anal setae are all approximately equal in length.

The stigma is situated ventro-laterally between coxae III and IV (Fig. 13). The peritreme is reduced and extends as far as the middle of coxa II. The peritrematal plate is well-developed being fused into the dorsal shield anteriorly and externally around part of coxa IV posteriorly. The exopodal plates are fragmentary.

The gnathosoma has four pairs of ventral setae (Fig. 14). The corniculi are relatively long and extend beyond the anterior margin of the pedipalp trochanter by nearly half their length. The fixed digit of the chelicera is only about one and a half times as long as the corniculi. The tectum is tridentate (Fig. 15). The movable digit of the chelicera is bidentate, the fixed multidentate and with a short *pilis dentilis* (Fig. 16).

All the legs are normal for the genus.

DIMENSIONS. Length 605 μ , breadth 275 μ .

LOCALITY. A single female (the holotype, 1954.3.19.7) from Point Barrow, Alaska (Coll. A. Weber).

MESOSTIGMATA—EPICRIINA

At present there are two conflicting views on the classification of the EPICRIINA depending on the relationship between the Epicriidae and Zerconidae. Vitzthum (1941) considers these families to be closely related and includes both in the EPICRIINA, which he defines as follows :

“Gnathosoma von oben meist nicht sichtbar. Männliche Genitalöffnung inmitten des Sternale. Rumpf meist etwas flachgedrückt, so dass Rückenfläche und Bauchfläche durch eine mehr oder weniger scharfe Kante geschieden sind. Männliche Cheliceren ohne Spermatophorenträger. Weibliche Genitalöffnung ein Querspalt vor einem Genitiventräle, das zwei oder mehr Haarepaare trägt.—Bisher ist nur bei *Triangulozercon* ein dem der *Gamasides* gleichendes Herz nachgewiesen.”

Trågårdh, on the other hand, disagrees with Vitzthum and in his important work on the classification of the Mesostigmata, based primarily on the structure of the sterniti-genital region in the female, places the Zerconidae in a distinct division, or cohort, the ZERCONINA. In Trågårdh (1938) the Epicriidae are included in the Sejidae (= Liroaspidae) a family of the SEJINA (= LIROASPINA) on the basis of the females possessing a primitive genital shield. This relationship between the Epicriids and Liroaspids was retained by Trågårdh (1946a) in a revised classification of the Mesostigmata, but later (Trågårdh, 1946b) the Epicriidae were removed from the LIROASPINA because of the differences in structure of the genital region of the male. This resulted in the EPICRIINA being grouped with the ZERCONINA since both had the male “aperture closed by a biarticulated plate attached at the anterior margin.”

Trågårdh's separation of the EPICRIINA and ZERCONINA appears therefore to be based on a difference in the structure of the sterniti-genital region of the females, which he considered to be fundamental. Recently the writer has compared the structure of the genital plate in a number of species of *Epicrius* s. lat. and *Zercon*. In both genera the function of the plate is basically the same as in the Laelaptoidea, the only difference being in the reduction of the hyaline epigynial portion of the plate which

is so well-developed in the free-living Laelaptoidea and Macrocheloidea. In *Epicrius* and *Zercon* the epigynial portion of the plate is reduced to a narrow chitinized rim so that the egg is not extruded along a "chute" as in the Laelaptoidea. Further, the males of both *Epicrius* and *Zercon* agree in a number of characters, for example, in the position of the genital orifice, in the presence of a pair of hairs on the anterior plate covering the genital orifice, and in the absence of a spermatophoral process on the chelicerae. In view of the apparent close relationship between the families the writer follows Vitzthum's concept of the EPICRIINA and proposes the following classification: Division EPICRIINA: Mites with the epigynial portion of the genital plate in the female reduced to a narrow chitinized rim overlapping the genital orifice. Male genital opening situated in the sternal shield in the region of coxae II and III and closed by two plates, the anterior of which bears a pair of hairs. Chelicerae dentate in both sexes, but without spermatophoral process in the male. Pedipalps with five free segments, specialized seta on palptarsus two or three pronged.

The EPICRIINA may be divided into the following superfamilies based on the ornamentation of the dorsal shield and the structure of the stigmata:

1. Peritreme and peritrematal plate absent in both sexes; the stigmata enclosed in a dorsal shield richly provided with small elevations forming a polygonal network. Jugular plates well-developed in both sexes
superfam. *Epicrioidea* nov.
- . Peritreme and peritrematal plates present, dorsal shield without characteristic ornamentation. Jugular plates absent in the female
superfam. *Zerconoidea* nov.

The Epicrioidea contains one family only, the Epicriidae, represented by the genera *Epicrius* (with the subgenus *Diepicrius* Berl.) and *Berlesiana* Turk. The Zerconoidea contains the following families:

1. Dorsal plate divided into a notocephale and notogaster of approximately equal size. Body triangular in outline with serrated lateral margins. All legs with claws. Peritreme reduced in length. Female genital plate with a pair of setae. Specialized seta on palptarsus two-pronged
fam. *Zerconidae* Berl.
- . Dorsal plate entire. Peritreme normal. Leg I in both sexes without claws. Strong sexual dimorphism in the structure of the dorsal shield. Female genital plate without setae. Specialized seta on palptarsus three-pronged
fam. *Arctacaridae* nov.

The family *Zerconidae* comprises three genera, *Zercon* Koch (syn. *Triangulozercon* Jacot), *Parazercon* Trågårdh (syn. *Trizerconoides* Jacot) and *Prozecon* Sellnick. The family *Arctacaridae* is erected for *Arctacarus rostratus* gen. nov. et sp. nov. described below.

The genus *Seiodes* Berl. 1887 (genotype *Seiodes ursinus* Berl. 1887) also belongs to the Epicriina, but whether it is referable to either of the two superfamilies here diagnosed is uncertain pending a re-examination of the types. The genotype species, *S. ursinus*, has the following characters: Dorsal shield entire, ventri-anal shield occupying the greater part of the region posterior to coxae IV in both sexes. All legs with well-developed claws. Femur II in the male spurred. Male genital orifice in sternal shield between coxae III. Chelicerae of the male without a spermatophoral process. The species named *S. hystricinus* by Berlese (1892) may not be congeneric with *ursinus*.

The collection from Alaska contained two species belonging to the EPICRIINA and these are described below.

Family ZERCONIDAE

The only representative of this family is a female of the genus *Zercon*. To date four species of the genus have been recorded from the Arctic, namely, *Zercon curiosus* Trägårdh, 1910, *Zercon arctuatus* Trägårdh, 1931, *Zercon triangularis* Koch, 1836, and

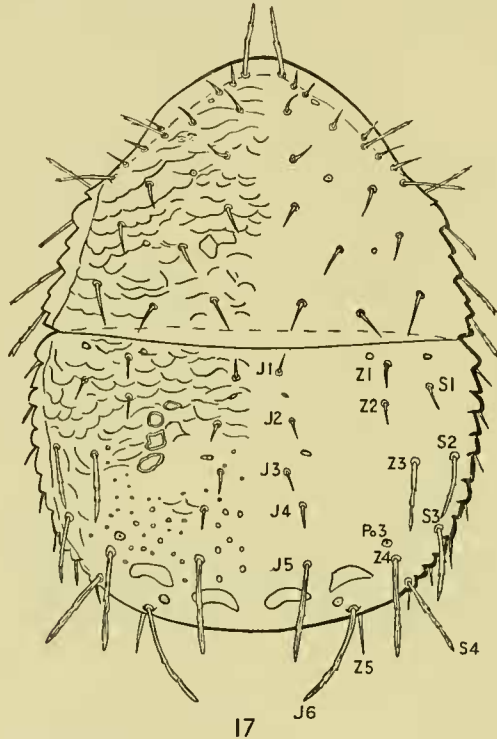


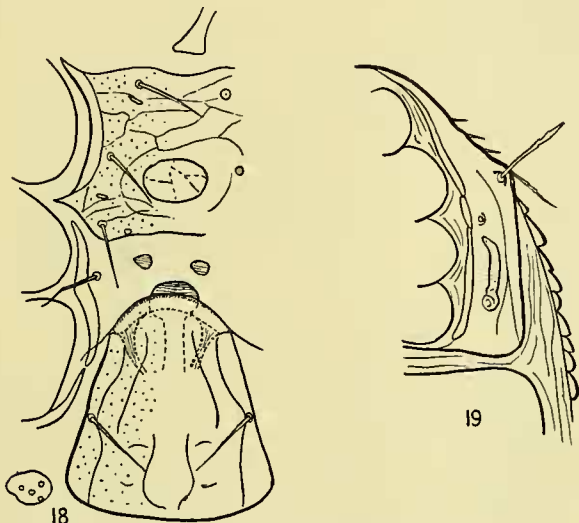
FIG. 17. *Zercon fenestralis* sp. nov., female. Fig. 17, dorsal view.

Zercon solenites Haarløv, 1942. *Z. curiosus* is recorded from a number of localities in Swedish Lappland, *Z. arctuatus* was first collected in an old orchard at Thorshavn in the Faroes (Trägårdh, 1931) and has recently been recorded from S. England by Evans (1953), *Z. triangularis*, reported from a number of localities in Spitzbergen by Thor (1930), is a widely distributed species in Europe. These three species are described and keyed in Sellnick (1944). The fourth species, *Z. solenites*, is known only from the type locality in Northern Greenland (Haarløv, 1942) and differs from the other known species of *Zercon* in having a well-developed peritreme reaching to coxa I.

The species collected in Alaska appears to be new to science on the basis of the chaetotaxy of the dorsal shields. The nomenclature for the chaetotaxy of the notogaster follows that of Sellnick (1944).

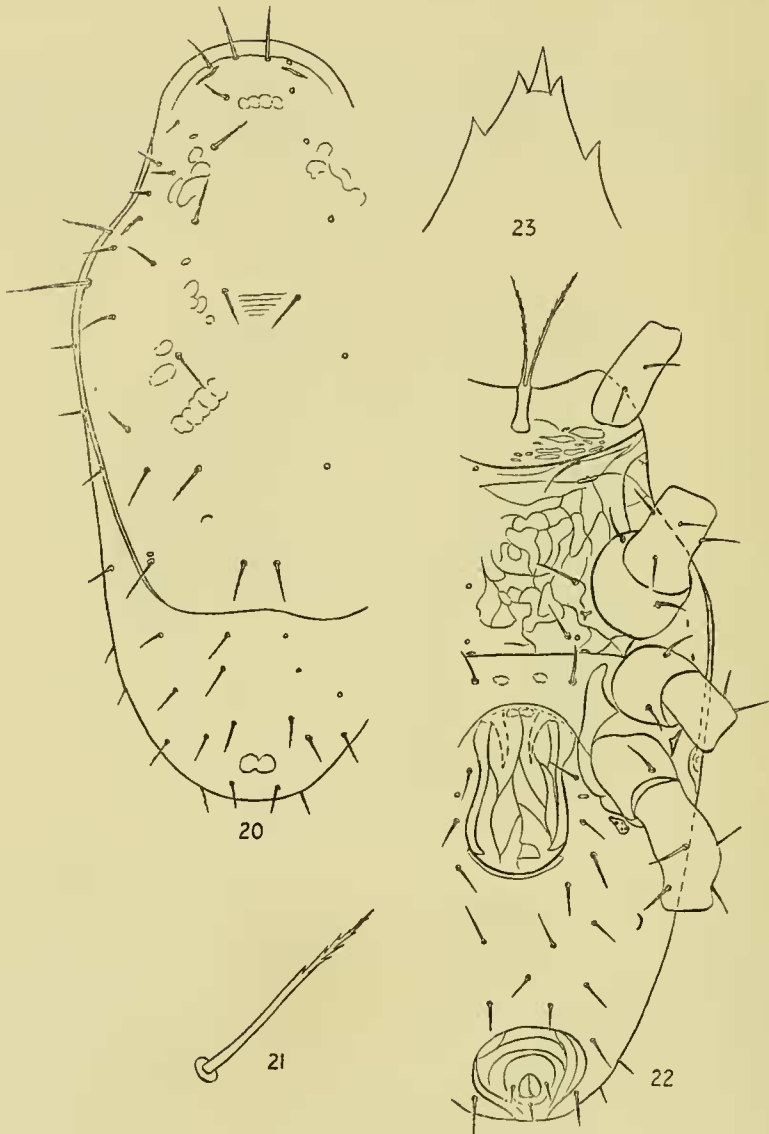
Zercon fenestralis sp. nov.

FEMALE. The dorsum is entirely covered by two shields of approximately equal size. The anterior shield, the notocephale, bears 15 pairs of simple dorsal setae distributed as in Fig. 17. The remainder of the chaetotaxy comprises stout coarsely serrated setae. These number six pairs, including the verticals. The lateral margins



FIGS. 18-19. *Zercon fenestralis* sp. nov., female. Fig. 18, sterniti-genital region. Fig. 19, peritreme and peritrematal plate.

of the notocephalic shield are serrated. Its surface is strongly reticulated and is provided with pores. The notogaster bears fifteen pairs of setae excluding a lateral series of seven. All the lateral setae are simple. Setae of the J series are well-developed. J₁-J₄ are short, simple, and of about equal length. The stout serrated setae, J₅ and J₆, are more than three times the length of J₁-J₄. Series Z comprises six setae of which Z₁ and Z₂ are similar to J₁ and J₂ in size and form. Z₃ and Z₄, however, resemble J₅ and J₆ in structure. Z₃ is shorter than Z₄. Z₅, situated in close proximity to J₆, is simple. Series S consists of four setae on either side. S₁ is simple and the same length as J₁ and Z₁. Setae S₂-S₄ are stout and serrated. S₁ is closer to Z₁ than S₂, but S₂, S₃ and S₄ are equidistant from each other. Pore 3 is situated a short distance in front of seta Z₄ and inside the line connecting Z₃ and Z₄. The distribution of the remaining pores is shown in the



FIGS. 20-23. *Arctacarus rostratus* gen. et sp. nov. Fig. 20, dorsal view. Fig. 21, dorsal seta. Fig. 22, ventral view. Fig. 23, tectum.

figure. The anterior half of the notogaster is strongly reticulated and the posterior half coarsely punctured. The four posterior depressions are conspicuous.

Ventrally, the sternal shield bears three pairs of simple setae and three pairs of pores (Fig. 18). The ornamentation is strong except for an oval area in the region of sternal setae II. The endopodal plate in the region of coxae II is fused with the lateral margin of the sternal shield. The metasternal setae are situated on the inter-scutal membrane posterior to the sternal shield and between them lie a pair of weakly sclerotized plates. The genital shield, truncated posteriorly, has a pair of genital setae. The epigynial portion of the plate is strongly sclerotized. The head of a club-shaped vaginal sclerite (?) protrudes from under the epigynial shield. The endopodal plate in the region of coxae III and IV is interrupted opposite the middle of coxae IV. The large ventri-anal shield is of the form normally found in the genus and bears eight pairs of simple setae (excluding the paranals and the post-anal setae).

The stigma and its short peritreme are enclosed in a large peritrematal plate truncated posteriorly and fused anteriorly with the notocephalic shield. The internal margin of the peritrematal is fused with the exopodal (Fig. 19). The peritrematal plate has a stout serrated seta and a large pore.

The legs and gnathosoma are normal for the genus.

DIMENSIONS. Length 465μ , breadth 375μ .

LOCALITY. A single female, the holotype (1954.3.19.27) from Point Barrow, Alaska (Coll. A. Weber).

Family ARCTACARIDAE fam. nov.

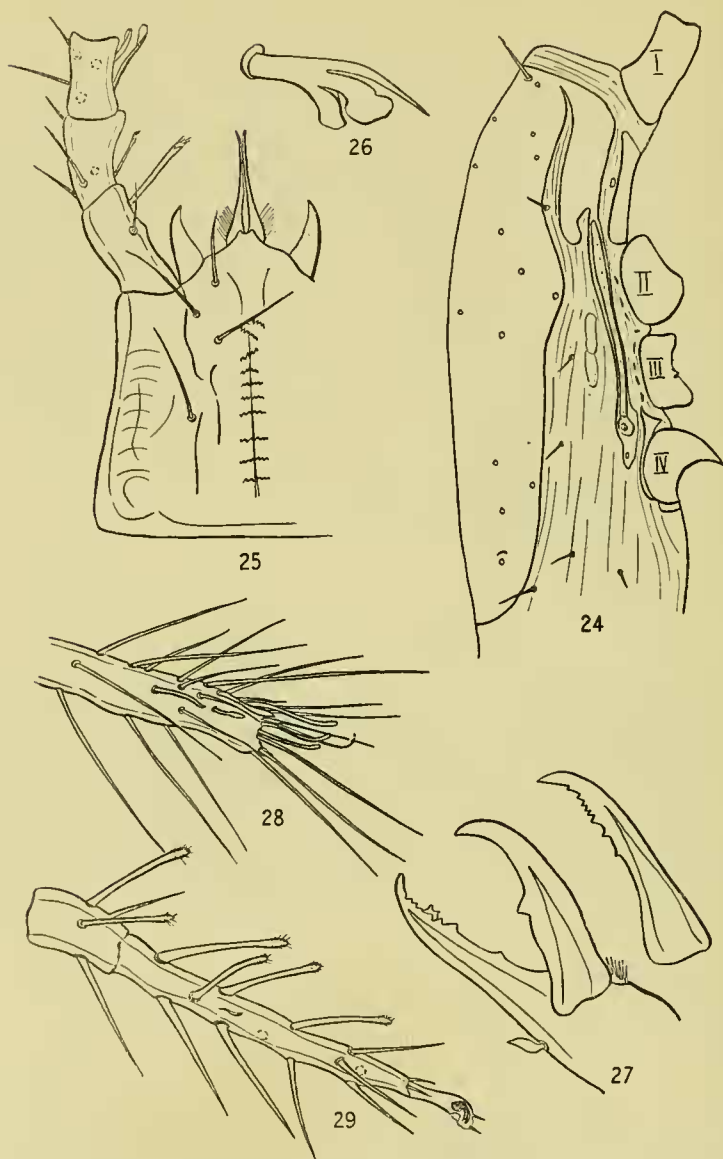
DIAGNOSIS. Dorsal shield heavily sclerotized in both sexes completely covering the dorsum of the female. Sterniti-genital region of female normal for the Epi-criina. In the male the sterniti-genital plate is fragmented in the region of coxae III-IV and separated from the ventri-anal plate. Male genital orifice closed by two plates, the anterior of which is provided with a pair of stout setae. Peritrematal plate fused with the dorsal shield anteriorly in the female but fused along its entire length in the male. Coxa I, femur II and IV spurred in male. Tarsus I in both sexes without pulvillus and claws. Tarsi II-IV with pulvillus and claws. Chelicerae dentate. Specialized seta on palptarsus three-pronged.

Genus *Arctacarus* gen. nov.

With the characters of the family. Type: *Arctacarus rostratus* sp. nov.

Arctacarus rostratus sp. nov.

FEMALE. The dorsal shield, $820-830\mu \times 515-528\mu$, is chestnut brown in colour and does not completely cover the dorsum of the mite (Fig. 20). The surface of the shield is finely striated and the dorsal setae are setose distally (Fig. 21). The shield has a large pair of lyriform pores postero-lateral to the vertical setae and a number of smaller pores distributed as in the figure. The posterior region of the dorsum is



FIGS. 24-29. *Arctacarus rostratus* gen. et. sp. nov. Fig. 24, lateral view. Fig. 25, Gnathosoma ventral. Fig. 26, specialized seta of palptarsus. Fig. 27, chelicera showing variation in the dentition of the movable digit. Fig. 28, Distal end of tarsus I. Fig. 29, tarsus IV.

not sclerotized and bears nine pairs of dorsal setae of similar form to those on the dorsal shield. Anterior to the posterior dorsal setae lies a small, weakly sclerotized plate incompletely divided into two equal-sized platelets. It is interesting to note that a pair of platelets is also present in this position in some species of *Veigaia* which have a larger dorsal shield (or shields) than *Arctacarus*.

The tritosternum is well-developed with the lacinae long and setose. The ornamented sternal shield bearing three pairs of sternal setae and three pairs of pores extends from the posterior edge of coxae I to the anterior border of coxae III (Fig. 22). It is produced into a broad sclerotized band between coxae I and II and is fused along its lateral margin with the endopodal plates. The region between the anterior margin of the sternal shield and the tritosternum is occupied by the fragmented prae-endopodal plates. The general structure of the sternal region in *Arctacarus* is not unlike that in the females of *Veigaia*. The metasternal setae lie on the interscutal membrane between the sternal shield and the anterior lip of the genital orifice. In between the metasternals lies a pair of small lightly sclerotized platelets (cf. *Zercon*). The endopodal plate in the region of coxae III and IV is well-developed and extends around the posterior border of coxae IV. The genital shield is flask-shaped, strongly ornamented and without setae; the genital setae and pores lying lateral to the shield. The structure of the anterior (epigynial) portion of the shield is similar to that in *Zercon*. The vaginal sclerite (?), however, is not nearly as well developed. A further comparison with *Zercon* can be made in the presence of a small "pore"-bearing plate situated posterior to coxae IV. The chaetotaxy of the region between the genital and anal shields is shown in the figure. The anal shield is pear-shaped and bears three setae—the para-anals and the post-anal setae. The shield is conspicuously ornamented. The chaetotaxy of coxae I–IV, is, respectively, 2–2–2–1.

The stigma lies ventro-laterally in line with the third intercoxal space (Fig. 24). The peritreme is well-developed and extends beyond the anterior margin of coxa II. The peritrematal plate, fused at its distal end with the dorsal shield, is broad in the region of the first intercoxal space but narrows markedly lateral to coxae II–IV. It is not fused with any part of the exopodal plate. The exopodal plate in the region of coxa IV is well-developed but in the region of coxae II and III it is fragmented. The interscutal membrane between the dorsal shield and the peritrematal plate has three setae and two weakly sclerotized platelets.

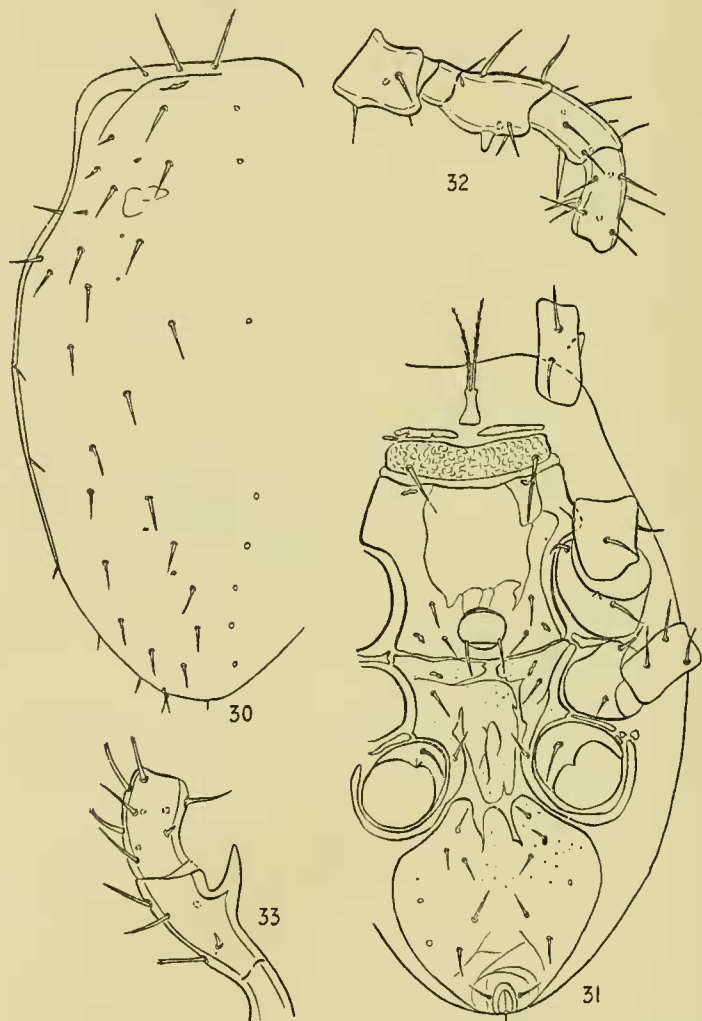
Ventrally the gnathosoma bears four pairs of stout setae (Fig. 25). The external posterior rostral seta is situated midway between the anterior rostral and internal posterior rostral setae and external to the line connecting them. The floor of the ventral groove is provided with ten rows of denticles. The corniculi are pointed distally and extend a short distance beyond the middle of the palptrochanter. The chaetotaxy of the palptrochanter, femur and genu is 2–5–6. A number of the internal setae on the palpgenu, trochanter and femur are serrated distally and the two internal setae on the palp spatulate. The specialized seta on the palp tarsus is three-lobed (Fig. 26). The tectum (epistome) is large and triangular in form with five distinct projections (Fig. 23).

The dentition of the movable digit is variable. Fig. 27 shows a unidentate and multidentate form; the latter having nine small teeth. The fixed digit has two

strong teeth and five to six smaller ones. The *pilis dentilis* is of an unusual form (see figure).

Leg I, varying between 1030μ and 1045μ in length, is approximately equal in length to the body of the mite. Tarsus I is without pulvillus and claws (Fig. 28). The majority of the dorsal setae on leg IV are stout and spiculate distally (Fig. 29).

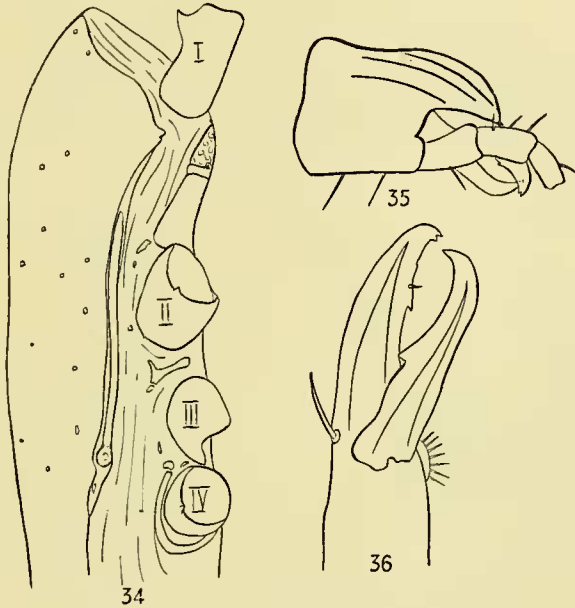
One of the females examined contained an egg measuring $400\mu \times 320\mu$.



FIGS. 30-33. *Arctacarus rostratus* gen. et sp. nov., male. Fig. 30, dorsal view. Fig. 31, ventral view. Fig. 32, leg I. Fig. 33, leg IV.

MALE. The contour of the body differs markedly from the female. The dorsal shield covers the entire dorsum of the male. The shield is broadest at the shoulders and tapers strongly towards the posterior end of the body. The chaetotactic pattern and the distribution of pores is shown in Fig. 30. The dorsal setae are serrated.

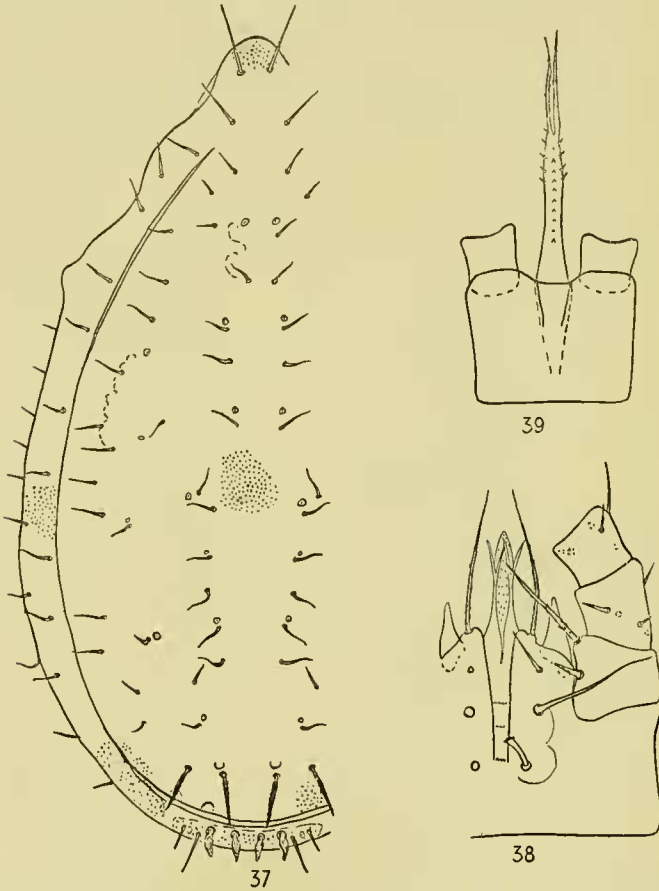
The tritosternum is basically the same as in the female (Fig. 31). The sternitogenital region is provided with a number of plates. The prae-endopodals are elongate and distinctly separate from the sternal shield. Sternal setae I are situated on the heavily ornamented anterior portion of the plate and are separated from it by a narrow strip of less strongly chitinized cuticle. Sternal setae II and III and pores I and II are placed in the weakly ornamented portion of the sternal shield extending from the middle of the first intercoxal space to the posterior margins of coxae II.



FIGS. 34-36. *Arctacarus rostratus* gen. et sp. nov., male. Fig. 34, lateral view. Fig. 35, tectum. Fig. 36, chelicera.

The shield is not produced between coxae I and II as in the female. The genital orifice is situated in the posterior third of the shield and is closed by two plates; the anterior of which bears two stout setae. The shield in the region between coxae II and III is fragmented and variable in form. The lateral margin of the shield is fused with the endopodal plate. In the type specimen the shield is divided longitudinally into two shields of unequal size and each shield bears two setae and the metasternal or third sternal pore. The shields are punctured. The ventri-anal shield has four pairs of pre-anal setae in addition to those setae associated with the anal region, namely, the para-anals and the post-anal setae.

The peritrematal plate is fused along its entire length with the lateral margin of the dorsal shield (Fig. 34). The stigma is situated laterally in the region of the third intercoxal space. The peritreme is strong and extends beyond the anterior margin of coxa II. The exopodal plate of coxa IV is well-developed and entire. The remainder of the exopodal plate is fragmented.



Figs. 37-39. *Dinychus micropunctatus* sp. nov., female. Fig. 37, dorsal view. Fig. 38, gnathosoma ventral. Fig. 39, tectum.

The gnathosome and palps are the same as in the female. The epistome (tectum) on the other hand is considerably more strongly developed than in the female and is beak-like in form (Fig. 35).

The fixed digit is bidentate and bears a short spine-like *pilus dentilis* (Fig. 36). The movable digit, without spermatophoral process, is unidentate.

Leg I is long and slender as in the female and is without pulvillus and claws. Coxa I is provided with a strong spur (Fig. 31). Legs II-IV terminate in a pulvillus and two claws. The femur of legs II and IV are spurred (Figs. 32 and 33).

DIMENSIONS. Female: Length 1050-1080 μ , breadth 515-528 μ . Male: Length 925-940 μ , breadth 575-590 μ .

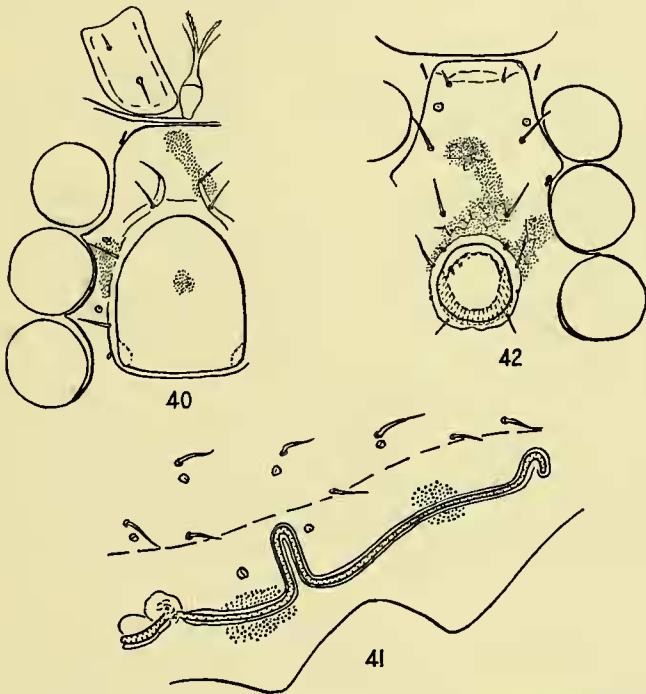
LOCALITY. Two females and four males from Point Barrow, Alaska (Coll. A. Weber, 1950). Holotype female (1954.3.19.21), Allotype male (1954.3.19.23) and paratypes (1954.3.19.22, 24-26).

MESOSTIGMATA—UROPODINA

Family PRODINYCHIDAE

Dinychus micropunctatus sp. nov.

FEMALE. The dorsal shield is oval in contour and densely covered with minute punctations. The chaetotaxy and distribution of pores is shown in Fig. 37. The vertex is short with the vertical setae long and stout. The two pairs of long setae situated posteriorly on the dorsal shield are setose. The marginal shield is of the



FIGS. 40-42. *Dinychus micropunctatus* sp. nov. Fig. 40, sterniti-genital region of female. Fig. 41, lateral view of female showing peritreme. Fig. 42, sterniti-genital region of male.

same structure as the dorsal shield. The posterior marginal shield bears two pairs of short, stout serrated setae and two pairs of simple setae. The latter lie on either side of the serrated setae.

The tritosternum is short and of the form shown in Fig. 40. The sternal region is covered with minute punctuations and a faint polygonal network. The anterior margin of the sternal shield is straight. Sternal setae I and II are situated between coxae II; on setae I and II on either side are placed on a sclerotised ridge (Fig. 40). Sternal setae III and IV (according to Trågårdh, 1943, seta IV is the pseudosternal) lie lateral to the large epigynial shield which extends from the middle of coxae IV to the posterior margin of coxae II. The ornamentation of the epigynial shield is similar to that of the sternal shield. Four pairs of pores are present in the sterniti-genital region. The remainder of the venter of the female is typical for the genus.

The peritreme is long and convoluted. The stigma is situated ventro-lateral of coxa III (Fig. 41). The peritreme continues a short distance posterior to the stigma. Anterior to the stigma the peritreme is looped in the region of coxae II. A pore is present anterior and posterior to the loop.

The four pairs of ventral setae are distributed as in Fig. 38. The capitular setae are short and setose distally. The external posterior rostrals are long and smooth and the internal posterior rostrals, situated anterior to the exterior posterior rostrals, short and simple. The anterior rostrals are long, about equal in length to the exterior rostrals, and setose. The corniculi are short and extend to the anterior margin of the palpfemur. The chaetotaxy of the palptrochanter, femur and genu is 2-5-5). The setae on the trochanter are stout and setose. The tectum (epistome) is produced into a long, narrow process, bifid distally (Fig. 39). The shaft is covered with small spines.

All legs terminate in a pulvillus and two claws and are normal for the genus.

MALE. The structure of the dorsal shield and peritreme is similar to that of the female. The sterniti-genital region is well differentiated (Fig. 42). The genital orifice is situated between coxae IV. The distribution of setae and pores is shown in the figure. The complete venter of the male is finely punctated.

DIMENSIONS. Female: Length 670-693 μ , breadth 370-375 μ . Male: Length 682-715 μ , breadth 380-385 μ

LOCALITY. Two females and four males from Point Barrow, Alaska (*Coll. Weber.*). Holotype female (1954.3.19.1), Allotype male (1954.3.19.2) and paratypes (1954 3.19.3-6).

Dinychnus micropunctatus sp. nov. is closely related to *Dinychnus sublaevis* (Trågårdh) 1943, in the chaetotaxy of the posterior dorsal region of both sexes. It differs from *D. sublaevis* in the ornamentation of the dorsal and ventral shields, and the structure of the sternal region of the female.

SUMMARY

I. A small collection of Mesostigmatid mites from Alaska comprises the following seven species:

Haemogamasus alaska Ewing.

Arctoseius ornatus sp. nov.

Arctoseius weberi sp. nov.
Arctoseius multidentatus sp. nov.
Zercon fenestralis sp. nov.
Arctacarus rostratus gen. et sp. nov.
Dinychus micropunctatus sp. nov.

2. The Arctic species (females only) of the genus *Arctoseius* Sig Thor s. str. are keyed.

3. *Tristomus* Hughes 1948 is made a synonym of *Arctoseius*.

4. The classification of the EPICRIINA is discussed and a new family ARCTACARIDAE is erected for *Arctacarus* gen. nov.

Acknowledgments

I am grateful to Dr. Max Sellnick, Stockholm, for comparing specimens of *Dinychus micropunctatus* with the type of *Dinychus sublaevis* and to Dr. H. W. Parker for his criticisms of the manuscript.

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